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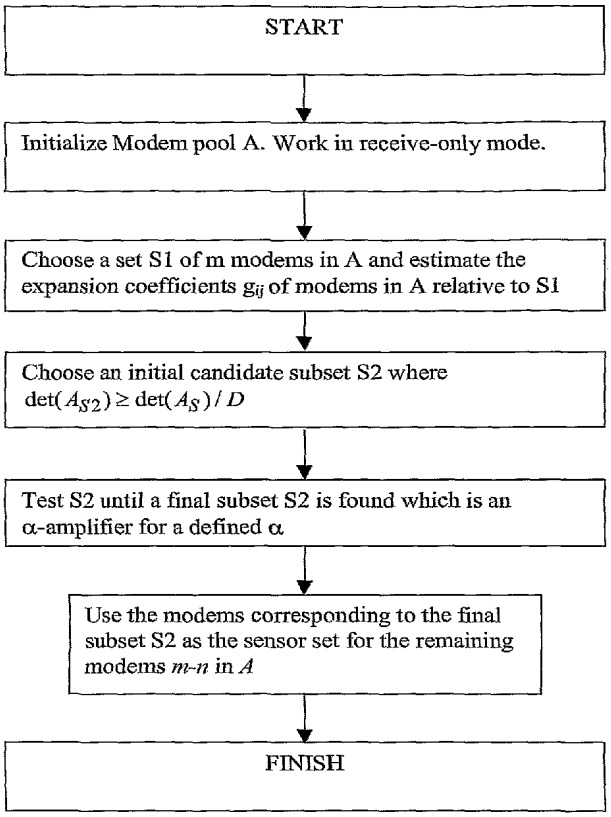
(54) Title: LINE SENSOR SELECTION FOR QUANTIFYING ALIEN CROSSTALK IN A SHARED COMMUNICATIONS MEDIUM



(57) Abstract: In a communication medium including a first set *A* of *n* communication channels and a second set *U* of *m* communication channels, a method for selecting sensor channels in *A* for quantifying crosstalk from *U*, including operating *A* in a receive-only mode (Fig.2 Step of Initialize Modem pool A. Work in receive-only mode.), choosing a subset S_1 of *A*, estimating the expansion coefficients of *A* as a predefined function of subset S_1 and signals received by *A* (Fig.2 Step of Choose a set S1 of m modems in A and estimate the expansion coefficients g_{ij} of modems in A relative to S1), choosing a candidate subset S_2 of size *m* of *A* where the determinant of a matrix of the expansion coefficients corresponding to the subset S_2 is greater than that of the expansion coefficients corresponding to any other subset of size *m* of *A* divided by a predefined bound *D* (Fig.2 Step of Choose an initial candidate subset S2 where det (A_{S2}) det (A_S)/D), calculating a threshold alpha, choosing a final subset S_2 that is an -amplifier of (Fig.2 Step of Test S2 until a final subset S2 is found which is an -amplifier for a defined), and employing the communications channels in the final subset S_2 as sensor channels (Fig.2 Step of Use the modems corresponding to the final subset S2 as the sensor set for the remaining modems m-n in A) for quantifying crosstalk from *U*.

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